Knowledge and practice of umbilical cord care among post-natal mothers in Southwest, Nigeria, 2023

Akin Oyebade[1], Abayomi Olarinmoye[1], Adeola Oshineye[1], Damilola Nureni[1], Ruth Ayuba[1]

[1]Department of Public Health, Adeleke University, Ede, Nigeria

ABSTRACT

Introduction: In developing countries, the incidence of umbilical cord infection varies from 2 to 7 per 100 live births and has an estimated mortality rate between 7% to 15%. Umbilical cord infection results from late-onset neonatal sepsis which occurs through the transmission of pathogens from the surrounding environment after delivery, such as contact from healthcare workers or caregivers. We determined knowledge and practice of umbilical cord care and associated factors among post-natal mothers attending primary healthcare centres in Ede, Nigeria. **Methods:** This study utilized the cross-sectional design with a multistage sampling technique. A semi-structured interviewer-administered questionnaire was administered to the 275 respondents between February and March 2023 in Ede, Nigeria. Knowledge of umbilical cord care was measured on a scale of 0-8 with score of 0-4 denoting poor knowledge while 5-8 denoted good knowledge. Practice of umbilical cord care was measured on a scale of 0-4 with score of 0-2 denoting poor practice while 3-4 denoted good practice. Descriptive statistics, Chi-squared test and logistic regression analysis at a 5% level of significance were carried out. **Results:** A total of 275 respondents participated in the study. The mean age of respondents was 25.9 years±8.23. Almost half of the respondents 117 (42.5%) were between 25-34 years old, 260 (94.5%) had Senior Secondary School education, 185 (67.3%) were married, 140 (50.9%) were Muslims, and 84 (66.9%) are traders. The mean score for respondents' knowledge of cord care was 4.76 out of a total score of 8 and 67.3% of them scored >5 on knowledge of cord care. The respondents mean score for cord care practice was 3.1 out of a total score of 4 and 79.6% of respondents scored >3 for cord care practice. Logistic regression analysis identified an association between place of delivery and knowledge of umbilical cord care. Of the different delivery places, only mothers who delivered from a health centre had statistically significant higher odds of having good knowledge of umbilical cord care compared to those who delivered at home/traditional birth attendant (adjusted odds ratio [aOR] 6.29, 95%CI: 2.3-17.2, p<0.001). Mothers who had a vaginal delivery had significantly higher odds of good umbilical cord care practice compared to those who delivered by cesarian section (aOR:3.00, 95%CI:1.29-6.96, p=0.01). While single/divorced/separated and widowed mothers were significantly less likely to have good cord care practice compared to married mothers (aOR: 0.12, 95%CI: 0.04-0.37, p<0.01). **Conclusion:** The study revealed good knowledge and practice of cord care among post-natal mothers attending primary health care centres in Ede. While delivery in a health centre was a predictor of good knowledge of cord care practice only vaginal delivery and being married were predictors of good cord care practice. There is a need to maintain and improve upon the good level of knowledge and practice of umbilical cord care so as to contribute towards achievement of the Sustainable Development Goal (SDG) 3.2 to reduce NMR to at least 12 per 1000 live births by 2030.

&CORRESPONDING AUTHOR

Akin Oyebade, Department of Public Health, Adeleke University, Ede, Nigeria

akinoyebade@yahoo.com

Introduction

In developing countries, the incidence of omphalitis varies from 2 to 7 per 100 live births with an estimated mortality rate of 7% to 15% [1]. Globally, in 2022, 2.3 million newborns died, a decrease by 44% since 2000 with premature birth, birth complications (birth asphyxia/trauma), neonatal infections and congenital anomalies remain the leading causes of neonatal deaths. [2].

Neonatal mortality rate (NMR) in Nigeria fell gradually from 63.7 deaths per 1,000 live births in 1972 to 34.9 deaths per 1,000 live births in 2021 [3]. It would therefore require a lot of effort for Nigeria to achieve the Sustainable Development Goal (SDG) 3.2 to reduce NMR to at least 12 per 1000 live births by 2030. [4].

Guidelines for essential newborn care comprise the following: hygiene during delivery, keeping the newborn warm, early initiation of breastfeeding, exclusive breastfeeding, care of the eyes, care during illness, immunization, and care of low birth-weight newborns [5]. In addition, umbilical cord care is a component of essential newborn care [6].

Umbilical cord care is the series of steps applied in handling the umbilical cord after delivery of the newborn [7]. The umbilical stump is to be kept dry and clean until the cord shrivels and dries up, to eventually fall off. This usually happens within 5 to 15 days. Soft gauze and water should be used to clean the cord stump at its attachment to the abdomen only when debris or other matter is observed to collect there and should be gently cleaned and mopped dry. The presence of infection should be carefully monitored, such as redness at the base of the stump, foul-smelling or yellow discharge from the stump, or evidence of swelling or tenderness around the stump [8].

Daily chlorhexidine (7.1% chlorhexidine digluconate aqueous solution or gel, delivering 4% chlorhexidine) application to the umbilical cord stump during the first week of life is recommended for newborns who are born at home in settings with high neonatal mortality (30 or more neonatal deaths per 1,000 live births). Clean, dry cord care is recommended for newborns delivered in health facilities and at home in low neonatal mortality settings. In order to avoid avoidable infant fatalities and life-threatening sepsis and cord infections, the use of chlorhexidine is recommended, particularly in environments with inadequate hygiene [9]. In addition, it has been shown that there is no evidence that methylated spirit is inferior to chlorhexidine in preventing neonatal omphalitis and therefore can be considered a safe and effective alternative where chlorhexidine is unavailable [10].

In Nigeria, multiple clinical studies have reported that umbilical cord infection accounts for 10% to 19% of neonatal admissions and 30% to 49% of neonatal deaths [7]. In Osun State, Neonatal Mortality Rate (NMR) decreased from 56 per 1,000 in 2016 [11] to 12 per 1,000 in 2021 [12], considering the significant impact of umbilical cord infection on neonatal morbidity and mortality, it is important to evaluate its contribution to this decline. We assessed the knowledge and practice of umbilical cord care and associated factors among post-natal mothers attending primary healthcare centres in Ede, Nigeria with a view to preventing omphalitis and therefore contribute to achieving the SDG 3.2 to reduce NMR in Nigeria.

Methods

Study setting and design

A cross-sectional study design was carried out between February and March 2023 in Ede, Osun State, Nigeria. Osun State is located in the Southwestern Nigeria, with 30 Local Government Areas (LGA) and projected population for 2022 of 4,435,800. Osun state is inhabited mainly by the Yoruba ethnic group, and its economy is based mainly on agriculture, and its capital city is Osogbo [13, 14].

Ede with a size of 862 km2 and population of 159,866 lies along the Osun River at a point on the railway from Lagos, 180km southwest, and at the intersection of roads from Osogbo, Ogbomosho and Ile-Ife. It is known for its local trading center for cotton, palm produce, corn cassava, okra, and kola nut. Ede has two local governments namely: Ede North and Ede South Local Government Areas [14, 15].

Study population

The study population comprised of all post-natal mothers, 15 years and above residing in Ede South Local Government of Nigeria. All consenting postnatal mothers aged 15 years and above whose babies were between two to eight weeks of life attending infant welfare clinics in the selected Primary Health Centers in Ede were included. Whereas all postnatal mothers who were too sick to participate where excluded.

Sample Size

The sample size was calculated using Fischer´s formula [16]:

$$n = \frac{Z\,\alpha/2(pq)}{d^2}$$

Where n is the required sample size, $Z\alpha/2$ is the standard normal deviation with 95% confidence of 1.96, p is the prevalence of 20.5% from a previous study [17], d is the level of precision of 0.05 and q is 1-prevalence equal to 79.5%. Therefore, the total sample size was 250, however, adjusting for the 10% non-response rate, the total sample size becomes 275.

Sampling technique

Selection of participants was done using multi-stage sampling: In stage one, Ede South Local Government Areas was selected by simple random sampling out of the two Local Government Areas in Ede. In Stage two, five primary healthcare centres (PHCs) were selected by balloting out of 22 PHCs in Ede South Local Government area. Stage 3: The sample size was distributed equally among the five PHCs selected in stage two. In each PHC, consenting mothers whose babies were between two to eight weeks of life, attending infant welfare clinics were selected using systematic random sampling until the allocated sample size was achieved. The first participant in each of the five PHC was selected randomly and then every fifth participant was selected in each PHC until 55 participants were selected in each PHC.

Study tool

The study utilized a pre-tested semi-structured interviewer-administered face-validated questionnaire developed by the authors comprising four sections. Section A collected information on socio-demographic characteristics, section B collected information on knowledge and source of information on cord care, section C collected information on practices of umbilical cord care management, and section D collected information on factors associated with umbilical cord management.

Data analysis

The completed questionnaires were cross-checked, coded, and entered into the Statistical Package for Social Sciences Software (IBM, SPSS 23.0) for analysis. We chose delivery at Home/ Traditional Birth Delivery as a reference group for place of delivery because of the absence or inadequacy of skilled birth workers. The knowledge of umbilical cord care was measured with 8 item questions of yes/no/don´t know type with score of 0-4 indicating low knowledge while 5-8 indicated good knowledge. Practice of umbilical cord care was measured with 4 item questions of yes/ no type with score of 0-2 indicating poor practice while 3-4 indicated good practice. Descriptive statistics generated frequencies and percentages, which we presented in text, tables and charts. Chi-square was used to test for an association between age, marital status, religion, education, occupation, place of delivery, mode of delivery and knowledge of cord care as well as cord care practice. Variables that achieved statistical significance at $p<0.05$ in Chi Squared analysis were selected for logistic regression to identify factors associated with cord care knowledge and practice adjusting for other variable and also to determine the magnitude and direction of association.

Ethical consideration

Data collection commenced after obtaining ethical approval from the Adeleke University, Ede, Nigeria Ethical Review Board. (AUERB). The reference number for the research is AUERC/2023/06/33PH-UG/015. Written Informed consent was obtained from participants by completion of the informed consent form before the commencement of the study. Participants were assured of confidentiality

Results

A total of 275 respondents participated in the study with mean age of 25.9±8.23 years. Almost half of the respondents 117 (42.5%) were in the 25-34 years age group, 260 (94.5%) were married, 185 (67.3%) were Muslims, 140 (50.9%) had Senior Secondary School education, and 84 (66.9%) were traders (Table 1).

A moderate proportion of respondents 128 (46.5%) had their delivery in the Hospital, 88 (32%) in the Healthcare Centre, 29 (10.5%) at home, 27 (9.8%) in the church/prayer house, and 3 (1.1%) with the traditional birth attendant. The majority of respondents 245 (89.1%) had vaginal delivery (Table 1).

A high proportion of 252 (91.6%) had awareness about cord management while 23 (8.4%) had no awareness about cord management.

A total of 67.3% of respondents had good knowledge of cord care while 79.6% of respondents had good cord care practice. Regarding respondents knowledge about umbilical cord care practice, majority (92.7%; 255/275) of them identified accurately that tying, cutting and cleaning with methylated spirit only is standard cord management, 71.3% (197/275) identified that the health care provider is the accurate source of knowledge for umbilical cord management, a small proportion (11.3%; 31/275) identified accurately that the umbilical cord should be exposed after cleaning and a high proportion (94.5%; 260/275) identified accurately that when the umbilical stump is moist or when unhygienic materials are placed on cord are the causes of umbilical cord infection. All (100%) respondents identified accurately that redness at the umbilical site or foul smell or yellowish discharge from cord are the signs of umbilical cord infection (Figure 1).

We assessed the respondents umbilical cord care practice and found that only 49.5% used a cord clamp to tie the cord. Majority (85.8%) used methylated spirit to clean the cord, three quarter (75.3%) washed hands with soap before and after cord care and a high proportion (98.5%) cleaned the cord three times or after each nappy change (Figure 2).

Logistic regression analysis identified the independent factors associated with umbilical cord care knowledge and practice. Mothers who delivered in health center (aOR=6.29, 95%CI =2.3-17.2, p<0.001) had statistically significant higher odds of having good knowledge of umbilical cord care compared to those who delivered at home or traditional birth attendant. Delivery at a hospital or church/prayer were not statistically significant (Table 2). Single/divorced/separated or widowed mothers had significantly lower odds of good umbilical cord care practice compared to married women (aOR=0.12, 95%CI: 0.04-0.37, p<0.01) and mothers who had a vaginal delivery had significantly higher odds of good umbilical cord care practice compared to those who delivered by cesarian section (aOR=3.00, 95%CI =1.29-6.96, p=0.01) (Table 3).

Discussion

We observed good knowledge of cord care among study participants. This could be due to the fact that the majority of respondents possessed more than primary education and a high proportion delivered their babies at the health facilities where they are likely to have been sensitized about cord care. This result is similar to the findings that 74.4% of respondents had good knowledge of umbilical cord care [17], 52.6% of respondents had adequate knowledge [18] and 62.2% of respondents had adequate knowledge of cord care [19]. However, this is in contrast to another study where only 48.1% of the respondents had a good level of knowledge [20].

While all the mothers in our study correctly identified the signs of umbilical cord infection, we identified some glaring knowledge gaps concerning the need to keep the umbilical cord exposed after cleaning, effect of the cord cleaning substance on the baby and reasons for choice of cord cleaning substance.

We also observed good practice of umbilical cord care among study participants since close to 80% of them scored 3+ out of 4. This was further supported by our findings that respondents scored 75% and above for 3 of the 4 questions related to cord care practice. Notably almost all respondents (98.5%)

cleaned the cord at least 3 times daily and 85.5% used methylated spirit to clean. This is likely to be due to the good level of knowledge of cord care. This finding is similar to the result that 59.2% of the respondents had good cord care practices [21], 54.4% of respondents had good practices of umbilical cord [17], 92.3% of mothers used methylated spirit to clean the cord [17] and 95.7% of mothers used methylated spirit to clean the cord [20]. However, this is in contrast with the findings that only 20.5% of mothers had good cord care practices [16] and the findings that only 21% of them had good cord care practices [17].

The study tested the hypothesis for association between sociodemographic and obstetric variables and knowledge of cord care. We observed statistically significant association between place of delivery and knowledge of cord care. Study participants who delivered in: health center were about 6 times more likely to have better knowledge of cord care compared to those who delivered in Homes/ Traditional Birth Attendants. This is likely to be due to the fact that mothers who delivered in health centres are more likely to have received health education of cord care practice compared to mothers who had home/traditional birth deliveries. This finding is similar to that reported that delivery in a health facility were important factors of knowledge on cord care. [18]. Mothers who had hospital deliveries had lower odds of having good knowledge with aOR of 1.26 compared to mothers who delivered in health centres with aOR of 6.25, although not statistically significant. This may be because more mothers deliver in health centres compared to hospitals. Mothers who delivered at church or prayer house were less likely to have good knowledge of cord care practice though this was not statistically significant. This may be because church/ prayers houses are not formally designed to provide delivery services and do not have adequate numbers of skilled birth attendants to sensitize mothers about knowledge of cord care practices.

The study also tested the hypothesis for association between sociodemographic and obstetric variables and practice of cord care. We observed statistically significant association between route of delivery and practice of cord care. Study participants who had a vaginal delivery were 3 times more likely to have better practice of cord care compared to those who delivered through cesarian section. This may be due to the fact that mothers who deliver through the vagina usually have more time to take care of the baby after delivery compared to mothers who deliver through the cesarian section because the latter remain in the hospital longer and usually have others take care of their babies at the initial stage [22]. In terms of place of delivery, a study observed that the use of harmful cord care practices was more common among mothers who delivered outside the health facility [9].

Single/divorced/separated or widowed mothers had significantly lower odds of good umbilical cord care practice compared to married women. This may be because married women are more likely to be supported and encouraged by their husbands to consistently exercise good cord care practices.

While findings from other studies reported that maternal education and infant's sex are predictors of good cord care practices[9] and that the majority of respondents with good knowledge of umbilical cord care had good cord care practices[17] in our study maternal education was not an independent risk factor for cord care. We did not assess the relationship between the baby's sex and cord care practices because we did not collect that data.

A major limitation of this study is the use of cross-sectional design which relies on self-reported data, which may not always be accurate due to factors like social desirability bias or recall bias.

Conclusion

The study revealed good knowledge and practice of cord among postnatal mothers attending primary health care centres in Ede. Delivery in a health centre is a predictor of good knowledge of cord care practice while vaginal delivery and being a married mother were predictors of good practice of cord care. There is a need to maintain and improve upon the good level of knowledge and practice of umbilical cord care. This will contribute towards achievement of the Sustainable Development Goal (SDG) 3.2 to reduce NMR to at least 12 per 1000 live births by 2030. Mothers who deliver with Home/Traditional Birth Attendants should be sensitized on cord care and mothers who delivered through cesarian section should be taught good cord care practices.

What is known about this topic

- It is already known that maternal education, sex of the neonate and knowledge of cord care are predictors of umbilical cord care practice
- It is already known that use of harmful cord care practices is more common among mothers who delivered outside health facilities

What this study adds

- This study adds that the delivery in a health centre is a predictor of good knowledge of cord care practice but delivery at a hospital was not
- This study adds that vaginal route of delivery is a predictor of good cord care practice

Competing interests

The authors declare no competing interests.

Authors´ contributions

Akin Oyebade:Conception and design; data acquisition, analysis and interpretation; article drafting, article critical revision for important intellectual content and final approval of the version to be published. Abayomi Olarinmoye:Contributions to conception and design; data acquisition article drafting, article critical revision for important intellectual content and final approval of the version to be published. Adeola Oshineye:Conception and design; data acquisition; article drafting, article critical revision for important intellectual content and final approval of the version to be published. Damilola Nureni:Conception and design; data acquisition; article drafting, article critical revision for important intellectual content and final approval of the version to be published. Ruth Ayuba:Conception and design; data acquisition; article drafting, article critical revision for important intellectual content and final approval of the version to be published.

Tables and figures

Table 1: Sociodemographic and Obstetrics Characteristics of the post-natal mothers in Ede, Southwest Nigeria

Table 2: Factors associated with good knowledge of umbilical cord care among post-natal mothers in Ede, southwest Nigeria

Table 3: Factors associated with the good practice of umbilical cord care among post-natal mothers in Ede, southwest Nigeria

Figure 1: Knowledge of umbilical cord care among post-natal mothers in Ede, southwest Nigeria

Figure 2: Common practice of umbilical cord care among post-natal mothers in Ede, southwest Nigeria

References

1. Painter K, Anand S, Philip K. **Omphalitis** . In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; c2024 [last update 2022 Sep 12; cited 2024 Jul 24]. [about 4 p.].

2. World Health Organization. **Newborn mortality** [Internet]. Geneva (Switzerland): World Health Organization; 2014 Mar 14 [cited 2024 Jul 24]. [about 5 screens].

3. Knoema. **Nigeria-Neonatal mortality rate** [Internet]. New York (NY): Knoema; 2024 [cited 2024 Jul 24].[about 3 screens].

4. United Nations (Nigeria). **Sustainable Development Goal 3: Good Health and Well-being** [Internet]. Abuja (Nigeria): United Nations (Nigeria); c2024 [cited 2024 Jul 24]. [about 5 screens].

5. World Health Organization. **Newborn Health** [Internet]. Geneva (Switzerland): World Health Organization; c2024 [cited 2024 Jul 24].[about 7 screens].

6. Chlorhexidine Working Group. **Country Guidance for Umbilical Cord Care: Implementing the World Health Organization Revised Recommendations on Cord Care** [Internet]. Fairfield (CT): Save the Children Federation; 2018 Jan 2 [cited 2024 Jul 2024].[about 4 p.].

7. Afolaranmi TO, Hassan ZI, Akinyemi OO, Sule SS, Malete MU, Choji CP, Bello DA.**Cord Care Practices: A Perspective of Contemporary African Setting**. Front Public Health [Internet]. 2018 Jan 31 [cited 2024 Jul 24];6:10. **https://doi.org/10.3389/fpubh.2018.00010 PubMed** | **Google Scholar**

8. Liji Thomas. **Caring for the Umbilical Cord Postpartum. News-Medical** [Internet]. 2017 Jul 4 [Updated: 2019 Feb 27; cited 2024 Jul 24].[about 7 screens].

9. Merga BT, Fekadu G, Raru TB, Ayana GM, Hassen FA, Bekana M, Negash B, Eshetu B, Birhanu A, Mulatu G, Balis B.**Determinants of potentially harmful traditional cord care practices among mothers in Ethiopia** . Front Pediatr [Internet]. 2022 Aug 30 [cited 2024 Jul 24];10:925638. **https://doi.org/10.3389/fped.2022.925638 PubMed** | **Google Scholar**

10. Shwe D, Afolaranmi T, Egbodo C, Musa J, Oguche S, Bode-Thomas F.**Methylated spirit versus chlorhexidine gel: A randomized non-inferiority trial for prevention of neonatal umbilical cord infection in Jos, North-Central Nigeria** . Niger J Clin Pract [Internet]. 2021 May 20 [cited 2024 Jul 24]; 24(5):762-769. **https://doi.org/10.4103/njcp.njcp_535_20 Google Scholar**

11. National Bureau of Statistics (Nigeria);United Nations Children´s Fund. **Multiple Indicator Cluster Survey 2016-17: Survey Findings Report** [Internet]. Abuja (Nigeria): National Bureau of Statistics; 2018 Feb [cited 2024 Jul 24]. 510 p. Jointly published by UNICEF. Download Nigeria-MICS-2016-17.pdf.

12. National Bureau of Statistics (Nigeria); United Nations Children´s Fund. **Multiple Indicator Cluster Survey 2021: Survey Findings Report** [Internet]. Abuja (Nigeria): National Bureau of Statistics; 2022 Aug [cited 2024 Jul 24]. 788 p. Jointly published by UNICEF. Download 2021 MICS full report.

13. City Population. **Osun (State, Nigeria) - Population Statistics, Charts, Map and Location** [Internet]. Oldenburg (Germany): Thomas Brinkhoff; 2022 Aug 23 [cited Mar 2024].

14. Osun State Government. **Osun State** [Internet]. Osogbo (Nigeria): Osun State Government; c2023 [cited 2023 Sept 11].

15. Editors of Encyclopaedia Britannica. **Encyclopedia Britannica** [Internet]. McKenna Amy, editor. Chicago (IL): Britannica; 1998 Jul 20. Ede: Nigeria ;[revised 2002 Mar 14; last updated 2014 Feb 13;cited 2023 Sept 11]. [about 2 screens].

16. Jung S.**Stratified Fisher´s exact test and its sample size calculation** . Biometrical J [Internet]. 2013 Nov 11 [cited 2024 Jul 23];56(1):129-40. **https://doi.org/10.1002/bimj.201300048 PubMed** | **Google Scholar**

17. Ango Umar, Adamu Asmau, Umar Muhammad, Tajudeen Musbau, Ahmad Abdullahi, Abdulrahman Hamzat.**Knowledge and practices of umbilical cord care among mothers attending antenatal care in the health facilities in Sokoto Metropolis, Nigeria**. Inter J of Contempory Medical Research [Internet]. 2021 Jan [cited 2024 Jul 23];8(1): A1-A7. **http://dx.doi.org/10.21276/ijcmr.2021.8.1.2 Google Scholar**

18. Ndomondo M, Outwater A, Mdegela S.**Assessment of Knowledge and Practices on Cord Care Among Postnatal mothers´ attending Public Health Facilities in Morogoro Municipality** . Tanzania Journal of Health Research [Internet]. 2022 May [cited 2024 Aug 1]; 23 (1):1-10. **https://dx.doi.org/10.4314/thrb.v23i1.9 Google Scholar**

19. Ayub Kalufya, N, Ali Seif S, Masoi TJ.**Knowledge and practice of umbilical cord care among young mothers of neonates in Tabora region: Analytical cross-sectional study**. Medicine [Internet]. 2022 Dec 9 [cited 2024 Jul 23];101(49):e31608. **https://doi.org/10.1097/md.0000000000031608 Google Scholar**

20. Ndikom Chizoma, Oluwatosin Abimbola.**Umbilical Cord Care Knowledge and Practices of Mothers attending Selected Primary Health Care Centres in Ibadan, Nigeria** . International Journal of Caring Sciences[Internet]. 2020 Jan-Apr[cited 2024 Jul 23]; 13 (1):143-151. **Google Scholar**

21. Dessalegn N, Dagnaw Y, Seid K, Wolde A.**Umbilical Cord Care Practices and Associated Factor Among Mothers of Neonates Visiting Mizan-Tepi University Teaching Hospital Southwest Ethiopia 2021**. PHMT [Internet]. 2022 Jun 7[cited 2024 Jul 23]; 13: 227-34. **https://doi.org/10.2147/phmt.s363252 Google Scholar**

22. Negrini R, Da Silva Ferreira RD, Guimarães DZ.**Value-based care in obstetrics: comparison between vaginal birth and caesarean sectionarean section** . BMC Pregnancy Childbirth [Internet]. 2021 Apr 26 [cited 2024 Jul 23];21(1):333. **https://doi.org/10.1186/s12884-021-03798-2 Google Scholar**

Table 1: Sociodemographic and Obstetrics Characteristics of the post-natal mothers in Ede, Southwest Nigeria N=275

Variable	Category	Frequency	Percent
Age (years)	15-24	105	38.2
	25-34	117	42.5
	³35	53	19.3
Marital Status	Single	2	0.7
	Married	260	94.5
	Divorced	5	1.8
	Separated	3	1.1
	widowed	5	1.8
Religion	Islam	185	67.3
	Christianity	82	29.8
	Traditionalist	6	2.2
	Others	2	0.7
Educational Status	No formal education	20	7.3
	JSS	51	18.5
	SSS	140	50.9
	Polytechnic	46	16.7
	University	18	6.5
Occupation	Trading	184	66.9
	Artisan	14	5.1
	Civil servant	28	10.2
	Unemployed	23	8.4
	Others	26	9.5
Where did you deliver your last baby?	Church/Prayer house	27	9.8
	Hospital	128	46.5
	Health centre	88	32.0
	Home	29	10.5
	Traditional birth attendant	3	1.1
Route of delivery	Vaginal delivery	245	89.1
	Caesarean section (CS)	30	10.9
Number of children	1-2	164	59.6
	3-4	89	32.4
	>4	22	8.0

Table 2: Factors associated with knowledge of umbilical cord care among post-natal mothers in Ede, southwest Nigeria

Independent Variables		Knowledge		Bivariate results		Multivariate results	
		Good	Poor	Chi Squared	P value	aOR (95%CI)	P value
Age (years)	15-24	70	35	1.87	0.39		
	25-34	83	34				
	³35	32	21				
Marital Status	Single/Divorced/Separated/ Widowed	7	8	3.06	0.08		
	Married	178	82				
	Divorced	2	3				
	Separated	1	2				
	widowed	2	3				
Religion	Islam	133	52	9.00	0.01*	0.24 (0.027-2.15)	0.20
	Christianity	45	37			0.119 (0.13-1.09)	0.06
	Traditionalist/Others	7	1			1	
Educational Status	No formal education	13	7	8.21	0.08		
	JSS	26	25				
	SSS	100	40				
	Polytechnic	34	12				
	University	12	6				
Occupation	Trading	131	53	7.46	0.11		
	Artisan	9	5				
	Civil servant	20	8				
	Unemployed	12	11				
	Others	13	13				
Place of delivery	Church/Prayer house	9	18	37.9	0.00*	0.39 (0.13-1.17)	0.09
	Hospital	79	49			1.26 (0.56-2.83)	0.57
	Health centre	79	9			6.29 (2.3-17.2)	<0.001
	Home/Traditional birth attendant	18	14			1	
Number of children	1-2	110	54	2.12	0.34		
	3-4	63	26				
	4 and above	12	10				
Route of delivery	Vaginal delivery	168	77	1.72	0.19		
	Caesarean section CS)	17	13				

Table 3: Factors associated with umbilical cord care practice among post-natal mothers in Ede, southwest Nigeria

Independent Variables		Cord Care Practice		Bivariate results		Multivariate results	
		Good	Poor	Chi Squared	P value	aOR (95%CI)	P value
Age (years)	15-24	86	19	1.56	0.45		
	25-34	94	23				
	³35	39	14				
Marital Status	Single/Divorced/Separated/ Widowed	5	10	20.9	0.001*	0.12 (0.04-0.37	<0.01*
	Married	214	46			1	
Religion	Islam	149	36	9.0	0.01*	4.75 (0.96-23.3)	0.055
	Christianity	67	15			4.82 (0.92-25.2	0.062
	Traditionalist/Others	3	5			1	
Educational Status	No formal education	14	6	5.4	0.24		
	JSS	37	14				
	SSS	113	27				
	Polytechnic	41	5				
	University	14	4				
Occupation	Trading	151	33	4.65	0.32		
	Artisan	10	4				
	Civil servant	22	6				
	Unemployed	19	4				
	Others	17	9				
Place of delivery of last baby	Church/Prayer house	19	8	6.22	0.10		
	Hospital	102	26				
	Health centre	76	12				
	Home/Traditional Birth Attendant	22	10				
Route of delivery	Vaginal delivery	201	44	8.00	0.005*	3.00 (1.29-6.96)	0.01*
	Caesarean section (CS)	18	12			1	
Number of children	1-2	134	30	3.90	0.14		
	3-4	71	18				
	4 and above	14	8				

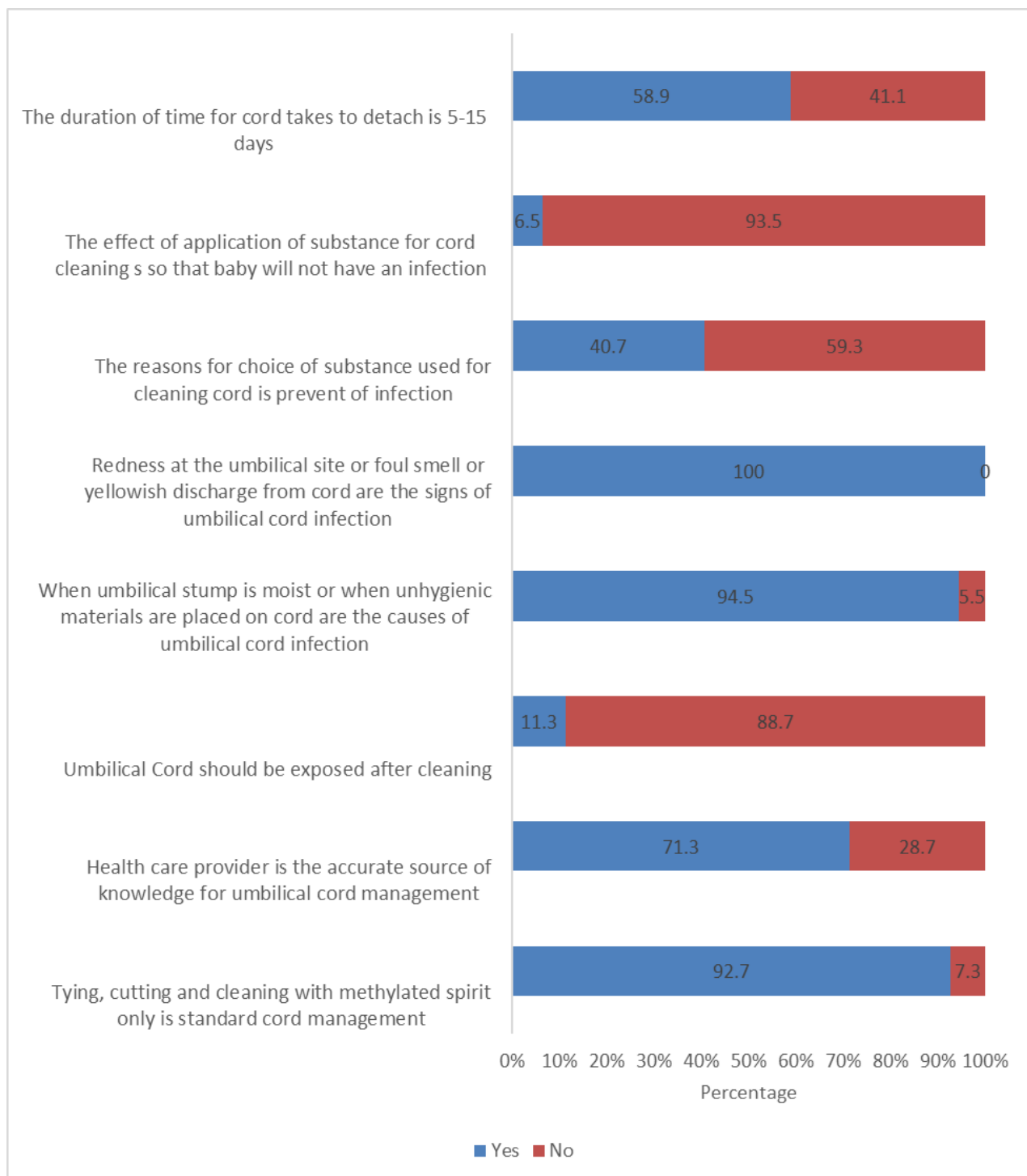*Statistically significant

Figure 1: Knowledge of umbilical cord care among post-natal mothers in Ede, southwest Nigeria